Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte LAMBERT ERNEST WIXSON

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Appeal No. 1999-2315
Application No. 08/742,432

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ON BRIEF

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Before HAIRSTON, JERRY SMITH and BARRETT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

## DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-3, 7, 8, 11 and 13-17. Claims 4-6, 9, 10 and 12 have been indicated to contain allowable subject matter.

The disclosed invention pertains to a method and apparatus for identifying and tracking objects within a scene represented by a sequence of images. More particularly, the invention uses a combination of two distinct methods for object detection. One method is suited for well-lit scenes, while the other method is suited for poorly-lit scenes.

Representative claim 1 is reproduced as follows:

1. A method of identifying and tracking objects within a scene represented by a sequence of images comprising the steps of:

generating a reference image containing background information of the scene;

selecting an image from said sequence of images as a two dimensional object image;

converting said two dimensional object image into a one-dimensional strip of object image values;

converting said reference image into a one-dimensional reference strip of reference values;

producing a difference strip of difference values by comparing the reference values in the reference strip to the object image values in the one-dimensional strip; and

processing said difference strip to identify moving objects in said scene.

The examiner relies on the following references:

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| Lo et al. (Lo) | 4,959,714 | Sep. 25, 1990 |
| Kajiwara | 5,218,414 | June 08, 1993 |

Shinohara 5,606,376 Feb. 25, 1997
(filed June 02, 1995)

M. Kilger, "A shadow Handler in a Video-based Real-time Traffic Monitoring System," IEEE Workshop on Application of Computer Vision 11-18 (May 1992).

Claims 1-3, 7, 8, 11 and 13-17 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Shinohara in view of Kajiwara with respect to claims 1-3, 11, 13, 15 and 17, adds Kilger to this combination with respect to claim 16, and adds Lo to the basic combination with respect to claims 7, 8 and 14.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

## OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's

rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1-3, 7, 8, 11 and 13-17. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.),

cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered (see 37 CFR § 1.192(a)).

The examiner rejects each of independent claims 1, 11 and 13 based on the teachings of Shinohara and Kajiwara. With respect to claim 1, the examiner finds that Shinohara teaches the claimed invention except for the steps which relate to a one-dimensional strip. The examiner cites Kajiwara as teaching the conversion of a two-dimensional window of an object image into a one-dimensional strip of the object image. The examiner finds that it would have been obvious to the artisan to use the teachings of

Kajiwara to modify Shinohara's method by converting the two-dimensional images of the object into one-dimensional images of the object. The examiner also finds that it would have been obvious to the artisan to convert a two-dimensional window of the background image into a one-dimensional strip (answer, pages
4-5). With respect to claims 11 and 13, the examiner cites Shinohara as additionally teaching the generation of brightness difference values and energy difference values and using these values to classify an object image (id., pages 5-6).

Appellant argues these independent claims separately. With respect to independent claim 1, appellant argues that Kajiwara does not teach the step of converting a two-dimensional image into a one-dimensional strip as asserted by the examiner. Appellant points out that the section of Kajiwara relied on by the examiner does not teach or suggest the element of claim 1 for which it is relied on by the examiner (brief, pages 9-10). The examiner responds that the one-dimensional box in Figures 7(c) and 4B of Kajiwara defines all image pixels on a column (q) of a strip of width (S) which

agrees with appellant's definition of 2D/1D conversion (answer, pages 8-9). Appellant responds that the box in Kajiwara is clearly a two-dimensional object (s pixels

wide by m pixels long), and that there is no disclosure of converting this box into a one-dimensional strip as claimed (reply brief).

We agree with the position argued by appellant. Kajiwara does not teach or suggest the conversion of a two-dimensional object image into a one-dimensional strip of the object image for reasons explained by appellant. Since Kajiwara does not provide this teaching, it also does not teach or suggest the steps of converting the reference image into a one-dimensional strip, producing a difference strip and processing the difference strip to identify moving objects as recited in claim 1. Therefore, we do not sustain the examiner's rejection of independent claim 1.

With respect to independent claims 11 and 13, appellant argues that both Shinohara and Kajiwara process the magnitudes of the pixel values in the input images and do not teach or suggest the claimed generation of an energy difference value or any form of energy computation (brief, pages 11-12). The examiner responds that Shinohara discloses the generation of a brightness difference value, an energy difference value, and

the comparison of these values to threshold values to classify each object image value (answer, pages 9-10).

We again agree with the position argued by appellant. We are unable to equate the mean value and variance computations of Shinohara with brightness difference value computations and energy difference value computations as the examiner has done. We agree with appellant that there is no teaching in Shinohara of computing energy difference values and comparing energy difference values to energy difference threshold values as recited in claims 11 and 13. Therefore, we do not sustain the examiner's rejection of independent claims 11 and 13.

Since we have not sustained the examiner's rejection of independent claims 1, 11 and 13, we also do not sustain the rejection of any dependent claims based only on the teachings of Shinohara and Kajiwara. Although the examiner has applied the additional teachings of Kilger or Lo to dependent claims 7, 8, 14 and 16, the additional teachings of Kilger and Lo do not overcome the deficiencies in the basic combination discussed above. Therefore, we do not sustain the rejection of any of the dependent claims on appeal.

In summary, we have not sustained any of the examiner's rejections of the claims on appeal. Therefore, the decision of the examiner rejecting claims 1-3, 7, 8, 11 and 13-17 is reversed.

REVERSED

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| KENNETH W. HAIRSTON<br>Administrative Patent Judge | ) | |
| JERRY SMITH<br>Administrative Patent Judge | ) | BOARD OF PATENT APPEALS AND INTERFERENCES |
| LEE E. BARRETT<br>Administrative Patent Judge | ) | |

JS:clm

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